

Innovative Technology Transfer Partnership (ITTP)



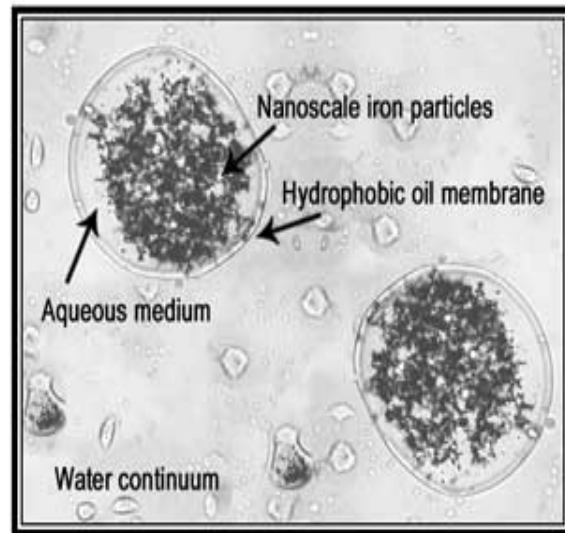
Success Story

In Situ Reductive Dehalogenation of DNAPLs Using Emulsified Zero-Valent Iron (EZVI)

Description of Innovation

Emulsified zero-valent iron (EZVI) can provide an effective alternative for treating chlorinated solvent present as dense non-aqueous phase liquids (DNAPLs) below the water table. This technology improves groundwater quality and reduces the potential human health and environmental risks associated with chemicals released to the environment from industrial operations. The EZVI technology combines two mechanisms, abiotic reductive dechlorination due to zero-valent iron {ZVI} and biological reductive dechlorination, to degrade chlorinated solvent DNAPLs present in pools or as residual to harmless compounds. The technology was originally developed by researchers at NASA and the University of Central Florida (UCF) and a field demonstration of the EZVI technology was conducted by GeoSyntec Consultants at LC34. The field demonstration was also the subject of an independent evaluation by the US EPA SITE Program.

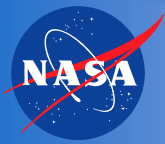
GeoSyntec, based in Boca Raton, Florida, is a small-business, environmental consulting company with commercialized specialty products for groundwater remediation. GeoSyntec provides private and public sector clients with earth and environmental sciences consulting services, environmental, geotechnical, and hydrological engineering consulting and design services. GeoSyntec completed demonstration testing of the EZVI technology under the NASA STTR program for the Cape Canaveral Air Station Launch Complex 34 (LC34) in 2002 and 2003.



EZVI Particles in Water

Commercial Benefits

In August 2004, the NASA Kennedy Space Center (KSC) entered into a Nonexclusive Patent License Agreement with GeoSyntec for the use and sale of NASA's Emulsified Zero Valent Iron (EZVI) (U.S. Patent No.6,664,298) technology for groundwater remediation. GeoSyntec plans to offer this technology to their clients as a potential remediation solution for chlorinated solvent contaminated groundwater, a common issue at industrial sites worldwide.



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Partnership Contributions

GeoSyntec has played a key role in developing technologies such as this one for the remediation of difficult to treat chemicals in the environment through its applied research partnerships with leading universities, NASA, and other government and industry players. These innovative technologies are being implemented at GeoSyntec's clients sites, in both the public and private sector. Five project teams led by GeoSyntec engineers and scientists have received funding for research projects through the Department of Defense (DoD) Strategic Environmental Research & Development Program (SERDP) and Environmental Security Technology Certification Program (ESTCP). These projects focus on innovative technologies for meeting the environmental needs of the DoD and other federal agencies. The projects cover a broad range of compliance, cleanup, and pollution prevention issues.

ITTP Role

GeoSyntec Consultants applied for, and were awarded Phase 1 and Phase 2 STTR Contracts through Kennedy Space Center's SBIR/STTR Program to address NASA's need for a cost effective method of treating chlorinated solvent DNAPL below the water table. Funding provided by this program allow additional development and field testing of the EZVI technology.

Other References, Sources

www.geosyntec.com

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